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Researchers Seek Networking Energy Efficiency

A team of researchers at Lawrence Berkeley National Laboratory hope to suggest new power consumption standards and practices for large network switches, wireless access points, set-top boxes, home control systems and other consumer gear as part of a two-year effort.

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By **Rick Merritt**
EE Times
Feb 5, 2007 05:48 PM

SAN JOSE, Calif. — Some of the same engineers creating a low-power Ethernet standard, are about to kick off a handful of new initiatives aimed at reducing power consumption in network and consumer systems.

A team of researchers at Lawrence Berkeley National Laboratory hope to suggest new power standards and practices for large network switches, wireless access points, set-top boxes, home control systems and other consumer gear as part of a two-year effort.

The Energy Efficient Digital Networks initiative at Lawrence Berkeley Lab is working with the Energy Star program run by the Environmental Protection Agency as well as academics in the Energy Efficient Internet Project at the University of South Florida. They aim to reduce the estimated 200 TeraWatt Hours of energy consumed by electronics devices at a cost of some $16 billion.

The group has already helped kick off a new low-power standard for Ethernet. It expects to create a Web site for its overarching initiative soon.

"All parts of the program are on a two year time frame, but if some of them get done sooner, that's great," said Bruce Nordman, a principal research associate at Lawrence Berkeley Lab who oversees the work. "I'm sure not everything will pan out as we hope, but if most of it does that could have a significant impact," he added.

Researchers think they could save as much as ten percent of the energy consumed by an average California home—70 of 700W-- with a new proxy feature alone. With proxying, a network card or external network system could maintain a PC's presence on the Net while the computer goes into sleep mode.

"We are trying to define the functionality we want here and then get it into products," said Nordman.

Once they have a proposal, researchers may turn to the Internet Engineering Task Force or the Distributed Management Task Force to make it a standard.

Separately the Lab is in the process of selecting a few network systems for which it will suggest power consumption standards and test procedures. Large net switches for businesses as well as Wi-Fi access points and cable/DSL gateways for homes are likely to be the first targets. Once complete, researchers will hand off their work to the Energy Star program.

In consumer electronics, the Lab hopes to push systems and standards from a two state (on/off) to a three state (on/sleep/off) model. The effort would set techniques to let OEMs automatically put systems in sleep or off states based on consumer activity as well as empower consumers to understand and choose those states explicitly with new remote control buttons.

Finally, the Lab has two education efforts in the works.

A consultant will be going to the OEM community to encourage them to understand and implement the low power features of the 1394 interconnect that researchers discovered are rarely used. Separately, the Lab hopes to compile a list of "green" smoke alarms, garage door openers, security systems and home control devices and provide it as a suggested buyers guide to new home builders.

"Builders don't have time to research these issues, yet these systems can consume anywhere from 50 to 100W in a new home," Nordman said.

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